

Billing Code: 4910-60-P

DEPARTMENT OF TRANSPORTATION

RESEARCH AND SPECIAL PROGRAMS ADMINISTRATION

Pipeline Safety: Internal Corrosion in Gas Transmission Pipelines

AGENCY: Research and Special Programs Administration (RSPA), DOT.

ACTION: Notice; issuance of advisory bulletin.

SUMMARY: The Office of Pipeline Safety (OPS) is issuing this bulletin to owners and operators of natural gas transmission pipeline systems to advise them to review their internal corrosion monitoring programs and operations. Operators should consider factors that influence the formation of internal corrosion, including gas quality and operating parameters. Operators should give special attention to pipeline alignment features that may contribute to internal corrosion by allowing condensates to settle out of the gas stream.

This action follows a review of incidents involving internal corrosion, some of which resulted in loss of life, injuries, and significant property damage. OPS' preliminary investigation of a recent gas transmission pipeline incident found wall thinning on damaged pipe associated with the incident. The wall thinning is consistent with that caused by internal corrosion.

ADDRESS: This document can be viewed at the OPS home page at: <http://ops.dot.gov>.

FOR FURTHER INFORMATION CONTACT: Richard Huriaux, (202) 366- 4565, or by e-mail, richard.huriaux@rspa.dot.gov.

SUPPLEMENTARY INFORMATION:

I. Background

Internal corrosion control in gas transmission pipelines is addressed in the federal pipeline safety regulations at 49 CFR §§192.475 and 192.477. Internal corrosion is most often found in gas transmission pipelines and appurtenances in the vicinity of production and gathering facilities or storage fields.

An OPS review of incident reports and inspections indicated that better industry guidance is needed to determine the best practices for monitoring the potential for internal corrosion in gas transmission pipelines. Some methods for monitoring internal corrosion are weight loss coupons, radiography, water chemistry tests, in-line inspection tools, and electrical, galvanic, resistance and hydrogen probes. Operators should refer to available recommended practices provided by national consensus standards organizations, such as the American Petroleum Institute, National Association of Corrosion Engineers, and Gas Piping Technology Committee (GPTC) for guidance in addressing internal corrosion issues.

OPS has worked with GPTC to revise the *Guide for Gas Transmission and Distribution Piping Systems* (Guide) to better address the control of internal corrosion. GPTC is considering modifying the Guide to address design considerations, corrective measures, and detection techniques for internal corrosion.

II. Advisory Bulletin (ADB-00-02)

To: Owners and Operators of Gas Transmission Pipelines.

Subject: Internal Corrosion in Gas Transmission Pipelines.

Purpose: To advise owners and operators of natural gas transmission pipelines of the need to review their internal corrosion monitoring programs and operations.

Advisory: Owners and operators of natural gas transmission pipelines should review their internal corrosion monitoring programs and consider factors that influence the formation of internal corrosion, including gas quality and operating parameters. Operators should give special attention to pipeline alignment features that may contribute to internal corrosion by allowing condensates to settle out of the gas stream.

This action follows a review of incidents involving internal corrosion, some of which resulted in loss of life, injuries, and significant property damage. OPS' preliminary investigation of a recent

gas transmission pipeline incident found internal wall thinning on damaged pipe associated with the incident. The wall thinning is consistent with that caused by internal corrosion.

Gas transmission owners and operators should thoroughly review their internal corrosion management programs and operations:

- ! Review procedures for testing to determine the existence or severity of internal corrosion associated with their pipelines. Some methods for monitoring internal corrosion are weight loss coupons, radiography, water chemistry tests, in-line inspection tools, and electrical, galvanic, resistance and hydrogen probes.

- ! Special attention should be given to specific conditions, including flow characteristics, pipeline location (especially drips, deadlegs, and sags, which are on-line segments that are not cleaned by pigging or other methods, fittings and/or “stabbed” connections which could affect gas flow, operating temperature and pressure, water content, carbon dioxide and hydrogen sulfide content, carbon dioxide partial pressure, presence of oxygen and/or bacteria, and sediment deposits.

- ! Review conditions in pipeline segments downstream of gas production and storage fields.

- ! Review conditions in pipeline segments with low spots, sharp bends, sudden diameter changes, and fittings that restrict flow or velocity. These features can contribute to the formation of internal corrosion by allowing condensates to settle out of the gas stream.

Issued in Washington, D.C. on _____.

Stacey L. Gerard

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